

# **AXIS 240Q Video Server**

## **User's Manual**

## About This Document

This manual is intended for administrators and users of the AXIS 240Q Video Server, and is applicable for firmware release 4.30. It includes instructions for using and managing the AXIS 240Q on your network. Previous experience of networking will be of use when installing and using this product. Some knowledge of UNIX or Linux-based systems would also be beneficial, for developing shell scripts and applications. Later versions of this document will be posted to the Axis Website, as required. See also the product's online help, available via the Web-based interface.

## Safety Notices Used In This Manual

**Caution!** - Indicates a potential hazard that can damage the product.

**Important!** - Indicates a hazard that can seriously impair operation.

Do not proceed beyond any of the above notices until you have fully understood the implications.

## Intellectual Property Rights

Axis AB has intellectual property rights relating to technology embodied in the product described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the patents listed at <http://www.axis.com/patent.htm> and one or more additional patents or pending patent applications in the US and other countries.

This product contains licensed third-party software. See the menu item "About" in the product's user interface for more information.

## Legal Considerations

Camera surveillance can be prohibited by laws that vary from country to country. Check the laws in your local region before using this product for surveillance purposes. This product includes one (1) MPEG-4 decoder license. To purchase further licenses, contact your reseller.

## Electromagnetic Compatibility (EMC)

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Re-orient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment to an outlet on a different circuit to the receiver. Consult your dealer or an experienced radio/TV technician for help. Shielded (STP) network cables must be used with this unit to ensure compliance with EMC standards.

**USA** - This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

**Canada** - This device complies with RSS-210 of Industry Canada. Operation is subject to the following conditions:  
(1) This device may not cause interference, and  
(2) this device must accept any interference, including interference that may cause undesired operation of the device

**Europe** -  This digital equipment fulfills the

requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial, and light industry.

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## Support Services

Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response. If you are connected to the Internet, you can:

- download user documentation and firmware updates
- find answers to resolved problems in the FAQ database. Search by product, category, or phrases
- report problems to Axis support staff by logging in to your private support area
- visit the Axis Support Web at [www.axis.com/techsup/](http://www.axis.com/techsup/)

## Safety Notice - Battery Replacement

The AXIS 240Q uses a 3.0V CR2032 Lithium battery as the power supply for its internal real-time clock (RTC). This battery will, under normal conditions, last for a minimum of 5 years. Low battery power affects the operation of the RTC, causing it to reset at every power-up. A log message will appear when battery replacement is required. The battery should not be replaced unless required!

If the battery does need replacing, observe the following points:

- **Caution!** Danger of Explosion if battery is incorrectly replaced
- Replace only with the same or equivalent battery, as recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

AXIS 240Q User's Manual  
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## Product Description

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The AXIS 240Q is a fully featured video server for security surveillance and remote monitoring needs. Based on the AXIS ARTPEC-2 compression chip, it can digitize up to 4 analog video sources and make these available on the network as real-time Motion JPEG video streams, at a maximum frame rate of 5 (PAL) or 6 (NTSC) frames per second.

Video can be viewed in 5 resolutions (up to 4CIF), and image compression is configurable. Up to 20 viewers can access the video server simultaneously.

The AXIS 240Q is equipped with RS-232 and RS-485 ports for the connection of third party PTZ devices. It also has 4 alarm inputs and 4 alarm outputs, which can be used to connect various third party devices, e.g. door sensors, alarm bells, etc.

The AXIS 240Q also contains support for video motion detection, which allows the unit to trigger on activity in the video image, and advanced scheduling tools that can also be used to trigger an event. As the video server is designed for use in security systems, it is equipped with several security features, such as HTTPS, IP address filtering and multiple user levels with passwords.

The AXIS 240Q has a built-in web server, providing full access to all features through the use of a standard browser. The built-in scripting tool allows the creation of basic applications, providing basic surveillance solutions.

For advanced functionality, the video server is easy to integrate through the use of the AXIS HTTP API (see [www.axis.com/developer](http://www.axis.com/developer)).

# AXIS 240Q Front Panel



**Indicators** - After completion of the startup and self-test routines, the multi-colored Network, Status, Power Indicators flash as follows:

Network	Unlit	No connection.
	Green	Steady for connection to a 100 Mbit/s network. Flashes for network activity.
	Amber	Steady for connection to a 10 Mbit/s network. Flashes for network activity.
Status	Unlit	When configured for "no flash" on camera access.
	Green	Steady for normal operation. Can be configured to flash green at intervals whenever the camera is accessed. See the online help for more information.
	Amber	Steady during startup, reset to factory default or when restoring settings.
	Red	Slow flash for failed upgrade.
Power	Green	Normal operation.
	Amber	Flashes green/amber during firmware upgrade.

**DIP Switches** - A corresponding line termination switch for each of the supported video inputs. All units are shipped with the line termination enabled for each video input; that is, with the DIP switches set in the down position.

**Note:** If the AXIS 240Q is to be connected in parallel with other equipment, disable the input termination by turning the corresponding DIP switch to the up position (OFF). Failure to do so may impair the image quality.

**Control Button** - Press this button to restore the factory default settings, as described in *Resetting to the Factory Default Settings, on page 43*, or to install using AXIS Internet Dynamic DNS Service (page 15).

**Video Inputs** - Accommodates up to 4 separate video sources (VIDEO 1 - VIDEO 4) simultaneously. Each supported video input is connected using a coax/BNC connector. Physical connections made using e.g. 75 Ohm coax video cable have a recommended maximum length of 800 feet (250 meters).

## AXIS 240Q Rear Panel



The Serial Number is located on the label on the underside of the unit.

**Power adapter connector** - A single socket for connection of the PS-K power adapter.

**I/O Terminal connector** - The I/O Terminal connector provides the physical interface to 4 digital transistor outputs, 4 digital inputs and an RS-485 interface. See *Unit Connectors*, on page 44 for more information.

**Note:** The I/O Terminal connector also provides an auxiliary connection point for DC power.

**Network Connector** - The AXIS 240Q connects to the network via a standard network cable. The AXIS 240Q detects the speed of the local network segment (10BaseT/100BaseTX Ethernet).

**RS-232 Serial Connector** - A 9-pin D-sub connector providing an RS-232 serial connection. Typically used for connecting Pan/Tilt/Zoom devices. See *Unit Connectors*, on page 44 for more information.

## Using the video server

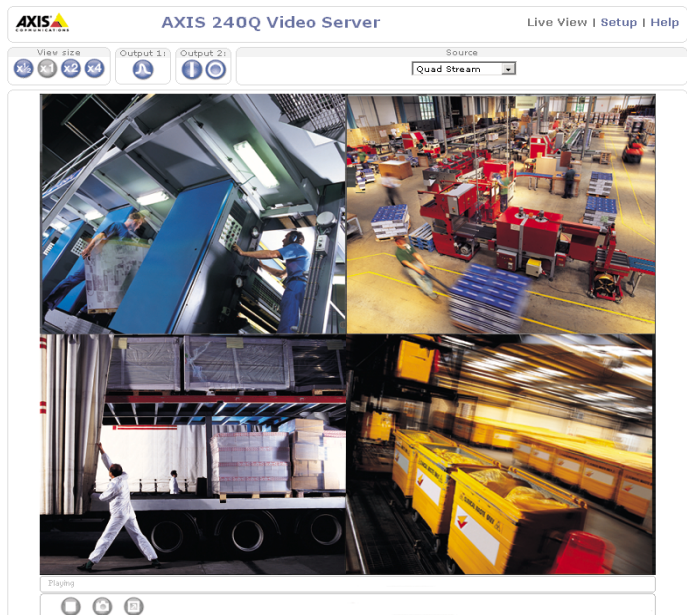
### Installation

Before the AXIS 240Q can be accessed it must be installed on your network. Please see the installation guide supplied with the product. Alternatively, download it from [www.axis.com](http://www.axis.com)

### Accessing the video server

The AXIS 240Q can be used with most standard operating systems and supports Microsoft Internet Explorer 6.x or later. For information about the AXIS 240Q and browsers please see [www.axis.com/techsup](http://www.axis.com/techsup)

1. Start your browser.
2. Enter the IP address or host name of the AXIS 240Q in the Location/Address field of your browser.
3. Enter the user name and password set by the administrator.
4. The Live View page is displayed in your browser.





- Notes:**
- To view streaming video in Microsoft Internet Explorer, you must set your browser to allow ActiveX controls and allow AMC (AXIS Media Control) to be installed on your workstation. If your workstation restricts the use of additional software components, the AXIS 240Q can be configured to use a Java applet for updating JPEG images. Please see the online help for more information.
  - User functions in the AXIS 240Q may have been customized to meet the specific requirements of the application. Consequently, the examples and functions in this section may differ from those displayed on your Live View page.

## The Live View page

If the AXIS 240Q has been customized, the buttons and other items described below will be displayed accordingly on the Live View page. The following provides an overview of each button:



To resize the displayed image, click the **View Size** buttons: half-size ( $x^{1/2}$ ), full-size ( $x1$ ),  $x2$  or  $x4$ . This will not change the resolution of the image (not available in Sequence Mode).



The **Output** buttons control an output directly from the Live View page. These buttons are configured under **Setup > Live View Config > Layout**.

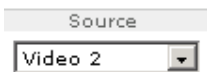


**Pulse** - click this button to activate the port for a defined period of time, e.g. to switch on a light for 20 seconds.

**Active/Inactive** - click these buttons to manually start and stop a connected device, e.g. switch a light on/off.



These buttons start/stop the **Sequence Mode**. This mode is created in **Setup > Live View Config > Sequence mode** and automatically displays the view from 2 or more video sources at set intervals.



From the **Source** list, select the desired video image(s). The list can contain internal video sources, external video sources, or the Quad Stream view. The **Quad Stream** option displays all four video images in one stream.



The **Action** buttons trigger an event directly from the Live View page. These buttons are configured under **Setup > Live View Config > Layout**. Click these buttons to manually start and stop events.



Use the **Snapshot** button to capture a snapshot of the image currently being displayed in the window. Right-click on the image to save it in on your computer.

The **AMC viewer toolbar** (AXIS Media Control) is available in **Microsoft Internet Explorer only** and displays the following buttons:



The **Play/Stop** buttons start and stop the live video stream.



The **Snapshot** button takes a snapshot of the currently displayed image. The Snapshot function and the target directory for saving snapshots can be configured from AMC (AXIS Media Control), which is available from the Windows Control Panel (Internet Explorer only).



Click the **View Full Screen** button and the video image will fill the entire screen area. No other windows will be visible. Press Esc (Escape) on your keyboard to cancel full screen view.

Note that these AMC toolbar functions can also be accessed by right-clicking in the image.

For information on using Pan/Tilt/Zoom controls, please see page 28.

## Video Streams

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The Live View page in the AXIS 240Q provides access to Motion JPEG video streams, as well as to single JPEG images. Other applications and clients can also access these video streams/images directly, without going via the Live View page.

### Motion JPEG

This format uses standard JPEG still images in the video stream. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion.

The Motion JPEG stream provides excellent image quality and access to each and every individual image contained in the stream. The level of image compression may need to be increased if bandwidth consumption is a problem.

Note also that multiple clients accessing Motion JPEG streams can use different image settings.

### The AXIS Media Control

The recommended method of accessing live video (Motion JPEG) from the AXIS 240Q is to use the AXIS Media Control (AMC) in Microsoft Internet Explorer in Windows. This ActiveX component is automatically installed on first use, after which it can be configured by opening the AMC Control Panel applet from the Windows Control Panel. Alternatively, right-click the video image in Internet Explorer.

## Other methods of accessing the video stream

Video and images from the AXIS 240Q can also be accessed in the following ways:

- If supported by the client, the AXIS 240Q can use Motion JPEG server push to display video. This option maintains an open HTTP connection to the browser and sends data as and when required, for as long as required.
- As single JPEG images in a browser. Enter e.g. the path:  
<http://<ip>/axis-cgi/jpg/image.cgi?resolution=CIF>

## Configuring the video server

This section describes how to configure the AXIS 240Q and is intended for:

- administrators, who have unrestricted access to all the Setup tools
- operators, who have access to the Video & Image, Live View Config and Event Configuration settings.

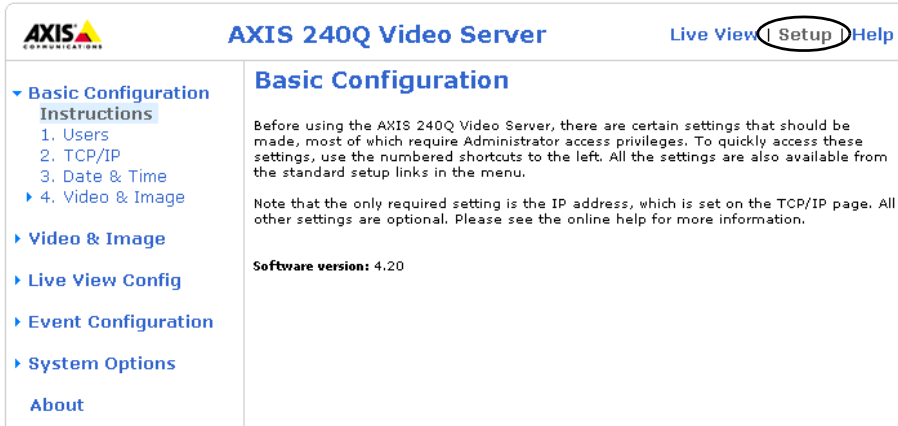
The AXIS 240Q is configured from the **Setup** link, in a standard browser (see *Technical Specifications*, on page 51).

### Accessing the Setup tools

Follow the instructions below to access the Setup Tools from a browser.

1. Start the browser and enter the IP address or host name of the AXIS 240Q in the location/address field.
2. The Live View page is now displayed. Click **Setup** to display the Setup tools.

### Overview of the Setup tools



**AXIS 240Q Video Server** Live View | **Setup** | Help

**Basic Configuration**

**Instructions**

Before using the AXIS 240Q Video Server, there are certain settings that should be made, most of which require Administrator access privileges. To quickly access these settings, use the numbered shortcuts to the left. All the settings are also available from the standard setup links in the menu.

Note that the only required setting is the IP address, which is set on the TCP/IP page. All other settings are optional. Please see the online help for more information.

**Software version:** 4.20

- Basic Configuration
  - Instructions
  - 1. Users
  - 2. TCP/IP
  - 3. Date & Time
  - 4. Video & Image
- Video & Image
- Live View Config
- Event Configuration
- System Options
- About

### Basic Configuration

The links under Basic Configuration are shortcuts providing a convenient way to make the necessary basic settings the first time the unit is configured.

Tools	Settings / Options / Description
Instructions	General Instructions
Users	See System Options > Security > Users below
TCP/IP	See System Options > Network > TCP/IP > Basic below.
Date & Time	See System Options > Date & Time below
Video & Image	See Video & Image > Video 1-4 below

## Video & Image (Administrator/Operator)

Tools	Settings / Options / Description	
Video 1 Video 2 Video 3 Video 4	Image	Make basic image settings; resolution, compression, color settings, rotate image, etc. Place an overlay image in the video image. Set limits on the video stream time and the frame rate.
	Video Source	Settings to modify the horizontal and vertical synchronization for the image from the camera(s) connected to the AXIS 240Q.
	Pan Tilt Zoom	Add and manage preset positions, set up the PTZ control queue.
Quad Stream	Quad Stream Settings	Quad Stream displays all four video streams in one stream. The settings made here apply to all four images in the Quad Stream.
Overlay Image	An overlay image is an image superimposed over the video image. From this page you can upload images to use for all video sources.	

## Live View Config (Administrator/Operator)

Tools	Settings / Options / Description
Layout	Set the default video format, add custom links, manual trigger buttons and manual output control buttons to the Live View page. Default Viewer: set your preferred method of viewing moving images.
HTML Examples	Add live video from the AXIS 240Q Video Server to your own web site, or save an HTML page on your local hard disk to display live images from the AXIS 240Q.
External Video	Display live video from an external video source i.e. from another device accessible over the network.
Sequence Mode	Configure the video server to automatically display the available video sources at regular intervals. The images can be displayed in order or randomly. The time interval can be set to up to 59 minutes.


## Event Configuration (Administrator/Operator)

Tools	Settings / Options / Description
Instructions	General Instructions
Event Servers	Specify destinations for uploaded image files and/or notification messages from the video server. FTP servers and HTTP servers are intended for saving image files and HTTP servers and TCP servers are intended for receiving notification messages.
Event Types	Set the video server to act on Triggered or Scheduled Event Types, e.g. to upload images to a specified destination when an alarm is activated or at a set time.
Motion Detection	Set up areas within each image where an alarm is activated whenever movement occurs in the image. Each motion detection window can be moved, re-sized, or disabled at any time. The behavior for each window is defined by adjusting the Object size, History, and Sensitivity profile sliders. Exclude windows can be used to block areas that are not to activate alarms.
Port Status	Shows the status for the video server's inputs and outputs - see <b>Ports &amp; Devices</b> under <b>System Options</b> .

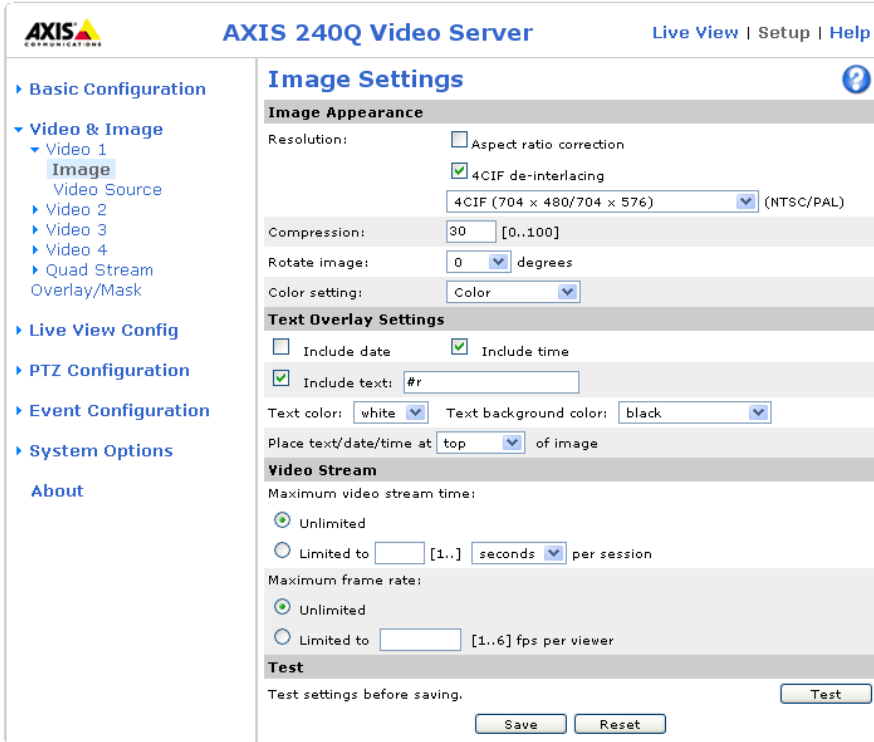
## System Options (Administrator)

Tools	Settings / Options / Description	
Security	Users	Access to the video server can be restricted to defined users only (maximum of 20). The administrator has unrestricted access to the Setup tools and determines rights for users at 3 levels; Administrator, Operator, Viewer.
	IP Address Filter	Once enabled, only the IP addresses shown in the list of allowed addresses will be permitted to access the Video Server. All others will be blocked.
	HTTPS	The AXIS 240Q can be configured for use with HTTPS, which provides encrypted web pages.
Date & Time	Define the date and time settings for your Video Server, manually or automatically.	
Network	TCP/IP - basic settings	Specify the IP address configuration, set up notification for a changed IP address, and register/unregister for the AXIS Internet Dynamic DNS Service.
	TCP/IP - advanced settings	DNS configuration. Host Name configuration. HTTP port and network traffic preferences.
	SOCKS	Specify the SOCKS server to use when communicating with hosts on the other side of a firewall/proxy server.
	SMTP	Specify host names or IP addresses for your mail server(s), to allow the video server to send event and error email messages to predefined email addresses. If the mail server requires authentication, set the security level and provide your user name and password.
	UPnP™	The video server includes support for UPnP, which is enabled by default. Enter a user friendly name for the video server.
Ports and Devices	I/O Ports	Configure the Video Server's 4 inputs and 4 outputs. Enter descriptive names for the ports and specify their Normal state (Open circuit or Grounded circuit).
	RS-232, RS-485	Select the desired operational mode for the COM port: Generic TCP/IP, Generic HTTP, or Pan Tilt Zoom (PTZ).  Selecting Pan Tilt Zoom enables the port to be used for controlling a connected PTZ device. Basic serial port settings can be adjusted by clicking the Port Options button.
Maintenance	Video Server	Maintenance functions for restarting the video server, restoring settings, upgrading the video server, backing up the video server's parameters and restoring to saved configurations.
Support	Support Overview	Troubleshooting guide, server report (attach this when contacting your support channel). Axis Support Services information.
	Logs & Reports	View the system's logs, the Server Report (important information about the server's status) and the parameter list (the unit's parameters and current settings).
Advanced	Scripting	This powerful function allows users to customize and use their own scripts to create specialized applications.
	Plain Config	Plain config allows direct access to all the configurable parameters.
About	Information on third-party software used in the product.	


## Video & Image Settings

The following descriptions show examples of the available features in the AXIS 240Q. For details about each setting, please refer to the online help available from each page. Click  to access the online help.

### Image Settings



**AXIS 240Q Video Server** Live View | Setup | Help

**Image Settings** 

**Image Appearance**

Resolution: ☐ Aspect ratio correction  
☒ 4CIF de-interlacing  
 4CIF (704 x 480/704 x 576) (NTSC/PAL)

Compression: 30 [0..100]

Rotate image: 0 degrees

Color setting: Color

**Text Overlay Settings**

☐ Include date ☒ Include time

☒ Include text: #r

Text color: white Text background color: black

Place text/date/time at top of image

**Video Stream**

Maximum video stream time:

☒ Unlimited  
☐ Limited to [1..] seconds per session

Maximum frame rate:

☒ Unlimited  
☐ Limited to [1..6] fps per viewer

**Test**

Test settings before saving. Test

Save Reset

### Image Appearance

Modify the **Image Appearance** to optimize the video images according to your requirements.

All configuration of images and overlays will affect the performance of the video server, depending on the usage and the available bandwidth.

- High resolution generates larger files
- Lower compression improves image quality, but generates larger files
- Black & White uses less bandwidth than Color
- Rotating the image 90 or 270 degrees will lower the maximum frame rate

## Text Overlay Settings

Include date, time and/or text of your choice to be viewed on the image. The color of the text may be set to white or black, while background color may be set to white, black, transparent or semitransparent. The position of the text is set either to the top or the bottom of the image.

## Video Stream

The **Maximum video stream time** can be set as *Unlimited*, or a **maximum stream time** per session in seconds, minutes or hours can be defined. When the set time has expired, a new stream can be started by refreshing the page in the Web browser. Note that the maximum video stream time does not apply to clients connecting via multicast.

To avoid bandwidth problems on the network, the **frame rate** allowed to each viewer can also be limited. Select either *Unlimited* or define a maximum frame rate per viewer.

For a preview of the image and overlay settings before saving, click **Test**. When you are satisfied with the settings, click **Save**.

## Video Source Settings

Enter a descriptive name for the Video source.

Black borders surrounding the image can be eliminated by adjusting the offset position. See the online help for more information.



## Quad Stream Settings

The settings are the same as the individual image settings and are active only when the quad stream view is selected, see *Image Settings*, on page 15.

## Overlay/Mask Settings

### Overlay/Mask Type

Overlay/Mask Type allows you to place an overlay, or up to three privacy masks over the video image:

- Upload and place an image as an overlay - usually used to provide extra information in the video image.
- Place up to three privacy masks - up to 3 configurable masks can be used to conceal different areas of the video image.

Selecting the overlay/mask type from the menu will display further settings available for the selected type. See the online help for further information.

**Note:** If you need to see an area of the video that is covered by an overlay or mask, a privacy mask cannot be bypassed. An overlay image, however, can be bypassed with the help of the AXIS HTTP API.

### Upload and use an overlay

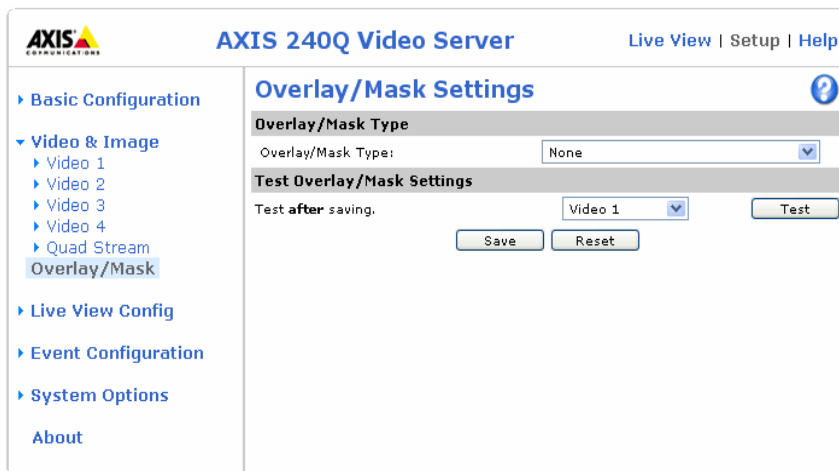
To upload an overlay image to the camera:

1. Select **Uploaded image as overlay** in the drop-down list for **Overlay/Mask Type**. New options appear.
2. In the field **Upload own image**, click the **Browse** button and locate the image file on your computer or server.
3. Click the **Upload** button and follow the on-screen instructions.

To use an already uploaded image:

1. Select an uploaded image from the **Use image** drop-down list.
2. Place the image at the required location by entering the x and y coordinates.
3. Click **Save**.





Overlay image requirements:

Image Formats	Image Size
<ul style="list-style-type: none"> <li>Windows 24-bit BMP (full color)</li> <li>Windows 4-bit BMP (16 colors)</li> </ul>	The height and width of the overlay image in pixels must be exactly divisible by 4.

Overlay image limitations:

- The maximum overlay image size supported by the AXIS 240Q is the same as the maximum image resolution. See Technical Specifications, on page 51.
- When a text overlay is also used, this reduces the amount of space available to the overlay image. To keep the text readable at lower resolutions, the text overlay occupies proportionally more of the image at lower resolutions.
- If the overlay is initially positioned so that part of it is outside the video image, it will be relocated so that it appears over the video image, i.e. it is always the entire image that is displayed.

Please see the online help  for more information.

### Use a Privacy Mask

To use privacy masks to hide different areas of the video image:

- Select **Configurable areas as privacy mask** in the drop-down list for **Overlay/Mask Type**. New options appear.
- Enter the (x,y) coordinates of the top left hand corner of the mask, and the height and width to define the masks' placement and size.
- Select the privacy masks' color: black, grey, white, or red.
- Click in the box beside **Enable** to enable one or more of the masks you have defined and click on **Save**.

Please see the online help  for more information.

# Live View Config

## Layout

These are the tools for deciding the layout of the Live View page.

The layout can be set in 3 ways:

- Use Axis look - the layout is unchanged.
- Use custom settings - modify the default page with your own colors, images etc. Click the **Configure** button and see the following page.
- Own Home Page - Upload and use your own custom made page as the default web page. Click the **Configure** button and see the following page.

The other settings on this page concern which other features to include, e.g. buttons and links. See page 20 for more information.

## Customizing the default page

The appearance of the default AXIS 240Q Live View page can be customized to suit your own requirements, or you can upload and use your own home page.

To upload your own files, click the **Upload/Remove** button and see the description below.

Note that the setup address is `http://<ip address>/operator/basic.shtml`

## Upload Own Web Files

Your own web files, background picture, color etc. must first be uploaded to the AXIS 240Q in order to be available for selection in the **Custom Settings** setup dialog. Once uploaded, the files are shown in the drop-down list.

1. Enter the path to the file, to e.g. a file located on your workstation, or click the **Browse** button.
2. Select the user level for the uploaded file. Setting the user access level means that you have complete control over which pages can be viewed by which users.
3. When the path is shown correctly in the text field, click the **Upload** button.

All uploaded files are shown in the list in the lower section of the page. To remove a file, check the box provided next to it and then click the **Remove** button.

- To use your uploaded file, click the radio button and select the file from the drop-down list **Own**:
- To use an external file located somewhere other than in the AXIS 240Q, click the radio button and enter the URL in the field **External**:

## Own Home Page

To use a previously uploaded web page as the default page, check this box, select the page from the drop-down list and click **OK**.

## User Defined Links

Enter a descriptive name and enter the URL in the provided field. The link will appear on the **Live View** page.

User defined CGI links can be used to issue HTTP API requests, e.g. PTZ commands.

Example:

1. Check **Show Custom Link 1**
2. Enter a descriptive name, e.g. **CAM1 Start PTZ**.
3. Enter the cgi link:  
`http://192.168.0.125/axis-cgi/com/ptz.cgi?camera=1&continuouspaniltmove=30,-30`
4. Check **Show Custom Link 2**.
5. Enter a descriptive name, e.g. **CAM1 Stop PTZ**.



6. Enter the cgi link:

`http://192.168.0.125/axis-cgi/com/ptz.cgi?camera=1&continuouspaniltmove=0,0`

7. These links will appear in the web interface and can be used to control the PTZ camera

For more information on the Axis HTTP API, see the Support / Developer pages on the Axis Web site at <http://www.axis.com>. See also the section on PTZ, on page 28.

## Action Buttons

These buttons can be used to manually trigger and stop an event from the Live View page. See *Event Servers*, on page 23. The **snapshot** button allows you to take a snapshot of the video stream and save it to a computer.

## Output Buttons

These buttons are used to control the outputs on the AXIS 240Q and thus the equipment connected to them, e.g. to switch a light on or off:

- The Pulse button activates the port for a defined period
- Active/Inactive displays 2 buttons, one for each action (on/off)

## AMC Settings

Check this box to display the AMC (AXIS Media Control) under the live video stream.

## Default Viewer for Motion JPEG

Select the appropriate radio button to define the method for viewing moving video images, depending on your browser and settings.

Please see the online help  for more information.

## HTML Examples

You can add live video from your AXIS 240Q to your own web site. The video server can send Motion-JPEG images to up to 20 simultaneous connections, although an administrator can restrict this to fewer.

Enter the Image Type, Image size and other settings to suit your web page and click Update.

## External Video

You can add links to other Axis network devices available over the network. These sources can be displayed on the Live View page, just as if they were video sources connected directly to the AXIS 240Q.

Click the **Add** button to open the External Video Source Setup dialog, which is used to make all the necessary settings.

Example of a path to an external video source:

```
http://192.168.0.125/axis-cgi/mjpeg/video.cgi
```

## Sequence Mode

The Live View page can be configured to rotate through selected internal and/or external video sources, in order or randomly. PTZ preset positions can also be included.



Select the desired video sources and enter the time in seconds to display each source (up to 59 minutes). Click **Save**.

The Sequence buttons will appear on the Live View page to allow the viewer to start and stop the sequence mode.

To show the selected video sources in random order, check the box provided.

# Event Configuration


This section describes how to configure the AXIS 240Q for alarm handling. Various actions can be configured to run when certain types of events occur.

Event type	A set of parameters describing how and when the video server is to perform certain actions	
Triggered Event (see page 24)	- the circumstances that start an event	e.g. at a signal from an external device, such as a door switch or a motion sensor
Scheduled Event (see page 25)	- the circumstances that start an event	e.g. at a pre-programmed time
Action	- what occurs when the event runs	e.g. video images uploaded to an FTP server, email notification sent, etc.

## Event Servers

Event Servers are used for e.g. receiving uploaded image files and/or notification messages. To set up Event server for your AXIS 240Q, go to **Setup > Event Configuration > Event Servers** and enter the required information according to the selected server type.

Server type	Purpose	Information required
FTP Server	<ul style="list-style-type: none"> <li>receives uploaded images</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive name of your choice</li> <li>User Name and Password (to FTP server)</li> <li>Upload path, e.g. images/</li> <li>Port number</li> <li>Use passive mode if there is a firewall between the video server and FTP server</li> </ul>
HTTP Server	<ul style="list-style-type: none"> <li>receives notification messages</li> <li>receives uploaded images</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive name of your choice</li> <li>URL (address)</li> <li>User Name and Password (to HTTP server)</li> <li>Proxy address/Proxy port (if required)</li> <li>Proxy User Name and Password (if required)</li> </ul>
TCP Server	<ul style="list-style-type: none"> <li>receives notification messages</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive name of your choice</li> <li>User Name and Password (for TCP server)</li> <li>Port number</li> </ul>

For details on each setting, please refer to the online help  available from each web page.

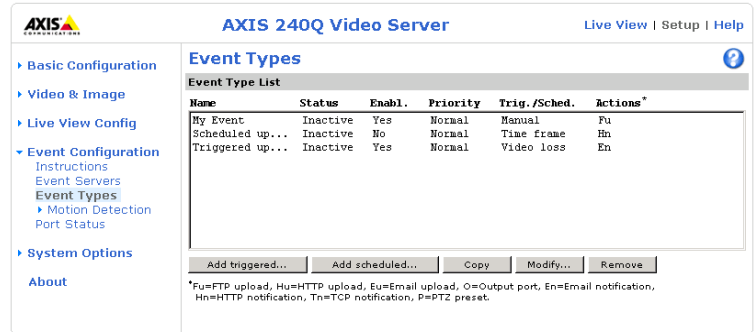
**Note:** Pre-trigger and Post-trigger buffers will be lost if the connection to the event server fails.

When the setup is complete, the connection can be tested by clicking the Test button (the connection test takes approximately 10 seconds).

## Event Types

An Event Type is a set of parameters describing how and when the video server is to perform certain actions.

**Example:** If somebody walks past the connected camera, and an event has been configured to act on this, the video server can e.g. record and send video images to an FTP server, or send a notification email to a pre-configured email address with a pre-configured message. Video images can be sent as an attachment with the email.



### Triggered Event

A triggered event is activated by e.g:

- a push button connected to an input port on the video server
- detected movement in a configured motion detection window
- a lost signal from a video source
- a manually activated action e.g. from an action button in the web interface
- on restart (reboot) after e.g. power loss

### How to set up a triggered event

This example describes how to set the video server to upload images when the main door is opened:

1. Click **Add triggered** on the Event types page.
2. Enter a descriptive name for the event, e.g. Main door.
3. Set the **priority** - High, Normal or Low (see online help files).
4. Select which **Video Source** the event is to act on, e.g. Video 1 on Main door.
5. Set the **Respond to Trigger...** parameters when the event is to be active, e.g. only after office hours
6. Select the trigger alternative from the **Triggered by...** drop-down list, e.g. an Input port with a connected sensor if the door is opened.
7. Set the **When Triggered...** parameters, i.e. set what the video server should do if the main door is opened, e.g. upload images to an FTP server.
8. Click **OK** to save the event in the Event Types list.

Please see the online help  for descriptions of each available option.



## Pre-trigger and Post-trigger buffers

This function is very useful when checking to see what happened immediately before and after a trigger, e.g. 2 minutes before and after a door was opened. Check the **Upload images** checkbox under **Event Types > Add Triggered... > Triggered by...** to expand the web page with the available options.

Up to 3 MB of memory (per video source) is available for the pre-/post-trigger buffer. The maximum length of the video actually saved in the buffer depends on the selected image size and frame rate.

**Include pre-trigger buffer** - images stored internally in the server from the time immediately preceding the trigger. Check the box to enable the pre-trigger buffer, enter the desired length of time and specify the required image frequency.

**Include post-trigger buffer** - contains images from the time immediately after the trigger. Configure as for pre-trigger.

**Note:** If the pre- or post-buffer is too large for the internal memory in the AXIS 240Q, the frame rate will be reduced and individual images may be missing. If this occurs, an entry will be created in the unit's log file.

**Continue image upload (unbuffered)** - enable the upload of images for a fixed length of time. Specify the length of time for the uploaded recording, in seconds, minutes or hours, or for as long as the trigger is active. Finally, set the desired image frequency to the maximum (the maximum available) or to a specified frame rate. The frame rate will be the best possible, but might not be as high as specified, especially if uploading via a slow connection.

## Scheduled Event

A **Scheduled event** can be activated at pre-set times, in a repeating pattern on selected weekdays.

### How to set up a scheduled event

This example describes how to set the video server to send an email notification with saved images from a set time:

1. Click **Add scheduled** on the **Event types** page.
2. Enter a descriptive **name** for the event, e.g. Scheduled email.
3. Set the **priority** (High, Normal or Low).
4. Select the **video source** i.e. the source the event should act on, e.g. Video 2 in Storage room.
5. Set the **Activation Time** parameters (24h clock) when the event should be active, e.g. start on Sundays at 13.00 with a duration of 12 hours.
6. Set the **When Activated...** parameters, i.e. specify what the video server should do at the specified time, e.g. send uploaded images to an email address.

7. Click **OK** to save the Event in the Event Types list.

Please see the online help  for descriptions of each available option.

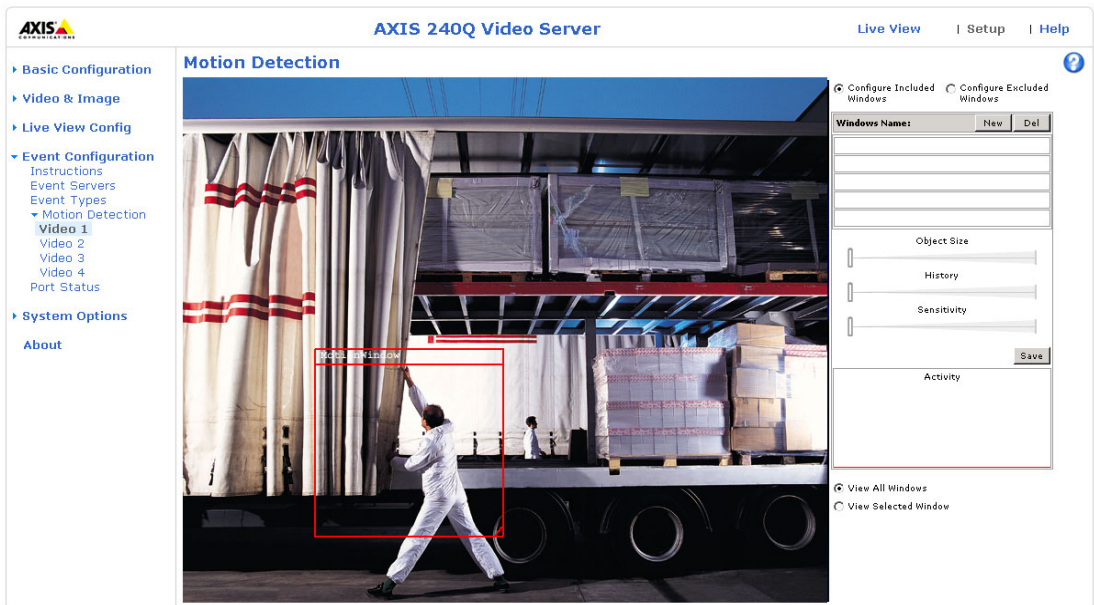
## Motion Detection

In the Motion Detection menu, you can configure the video source(s) for motion detection. The motion detection feature is used to generate an alarm whenever movement occurs (or stops) in the image. Motion detection is configured in Include and Exclude windows, of which up to 40 (10 per video source) can be configured.

- **Include** windows target specific areas within the whole image
- **Exclude** windows are areas to be ignored within the Include window

Once configured, the motion detection windows will appear in a list when motion detection is selected to trigger an event. See *How to set up a triggered event* above.

**Note:** Using the motion detection feature may decrease overall performance in the video server.



### How to configure Motion Detection

This example describes how to configure Video 1 for motion detection:

1. Click **Motion Detection** in the Event Configuration menu.
2. Select video source 1 from the menu.
3. Click the **Configure Included Windows** radio button.
4. Click **New**.
5. Enter a descriptive name of your choice under **Windows name**.

6. Adjust the size (drag the bottom right-hand corner) and position (click on the text at the top and drag to the desired position).
7. Adjust the Object size, History and Sensitivity profile sliders (see table below for details). Any detected motion within an active window is then indicated by red peaks in the **Activity** window (the active window has a red frame).
8. Click **Save**.

If there are parts of the Include window that you wish to exclude, click the **Configure Excluded Windows** radio button and repeat steps 1-8 above.

Please use the online help  for descriptions of each available option.

Parameter	Size	History	Sensitivity
High	Only very large objects trigger motion detection	An object that appears in the region will trigger the motion detection for a long period	Ordinary colored objects against ordinary backgrounds will trigger the motion detection
Low	Even very small objects trigger motion detection	An object that appears in the region will trigger motion detection for only a very short period	Only very bright objects against a dark background will trigger motion detection
Default values	Low	Medium to High	Medium to High

#### Examples:

- Avoid triggering on small objects in the image by selecting a high size level.
- To trigger motion detection as long as there is activity in the area, select a high history level.
- To only detect flashing light, low sensitivity can be selected. In other cases, a high sensitivity level is recommended.

## Port Status

Under **Event Configuration > Port Status**, there is a list that shows the status for the connected inputs and outputs of the AXIS 240Q. This is for the benefit of an operator, who cannot access the **System Options** section.

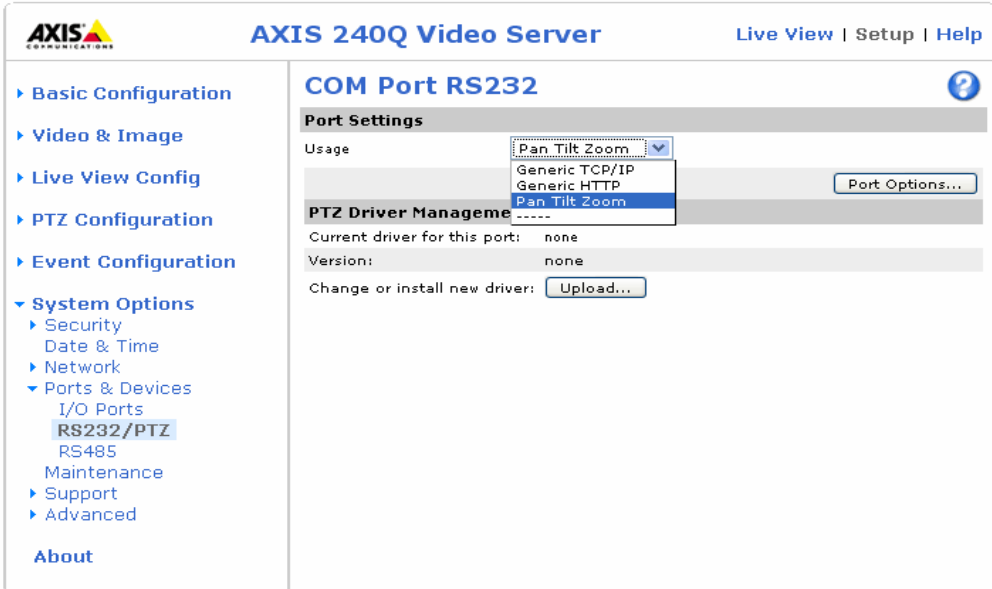
**Example:** If the Normal state for a push button connected to an input is set to Open circuit, as long as the button is not pushed, the state is inactive. If the button is pushed, the state of the input changes to active.


## Pan Tilt Zoom

### Installing PTZ Devices

The AXIS 240Q supports several PTZ devices. Please see [www.axis.com](http://www.axis.com) for a complete list of supported devices, and to obtain the correct driver. Follow the instructions below to install a PTZ device:

1. Using an appropriate cable, connect the device to your selected port (RS-232 or RS-485). These ports are available via the D-Sub connector and the I/O terminal connector, respectively. See page 46 for more information.
2. In the setup tools, go to **Setup > System Options > Ports & Devices** and then select either port RS-232 or RS-485 to configure. See the figure below.



3. Select **Pan Tilt Zoom** from the Usage drop-down list.
4. Click **Upload** to install a PTZ driver.  
(PTZ drivers are available from the Axis Web site at [www.axis.com](http://www.axis.com))
5. Click **Port Options...** to modify the port settings. The default values correspond to the values specified by the PTZ driver.
6. From **System Options > Ports & Devices**, select the port configured for PTZ and then select the video source to use with the device.
7. If required, click the **Advanced Options** button to make further settings and see the online help. 

**Note:** Advanced users and application developers can also use the Axis Application Programming Interface and HTTP specification for generic control of PTZ devices using CGI commands or a TCP/IP client. Please refer to the Axis Website at [www.axis.com](http://www.axis.com) for further information.

## PTZ Configuration

Once PTZ has been installed for the AXIS 240Q, *PTZ Configuration* now appears in the menu to the left along with the following submenus.

**AXIS 240Q Video Server** Live View | Setup | Help

**PTZ Configuration**

- Basic Configuration
- Video & Image
- Audio
- Live View Config
- PTZ Configuration**
  - Preset Positions
  - Guard Tour
  - Advanced
  - Control Queue
- Event Configuration
- System Options
- About

**Preset Positions**

**Preset Position Setup**

Current position:

☐ Use current position as Home

Add

Available positions:

Go to Remove

**PAN-TILT**

**PTZ Control Queue - Users**

Status in queue:  No entry in queue with higher priority than yours. Position in queue:

Time remaining:  seconds

## Preset Positions

A preset position is a pre-defined camera view that can be used to quickly move the camera to a specific location.

From **Preset Position Setup**, use the Pan, Tilt and Zoom (PTZ) controls to steer the camera to the required position. When satisfied with the camera's position, enter a descriptive name. The camera position, iris and focus settings are then saved as a preset position.

The position can be assumed at any time, by selecting the preset's name from the Preset positions drop-down list. Preset positions can be selected in **Live View**, from events and in **Sequence mode**.

One position can be set as the **Home** position, which is readily accessible by clicking in the box beside **Use current position as Home**. The position's name will then have (H) added, e.g. Office Entrance (H).

## PTZ Controls

If the AXIS 240Q has been appropriately configured, the Live View page will display the controls available for the installed Pan Tilt Zoom (PTZ) device. The administrator can enable/disable the controls for specified users.



The exact controls shown depends on the make and model of PTZ device. There may be e.g. Focus and Iris bars available as well, but the most common controls are;

- the Pan bar - moves the camera to the right and left
- the Tilt bar - tips the camera up and down
- the Zoom bar - zooms the view in and out. Note that this is only available if the camera is fitted with a zoom lens.
- the Iris bar - adjusts the brightness of the image

Clicking on the bars themselves or on the arrows at the end of the bars will move the camera to a new position. The type of movement and the location of this new position depends on the type of PTZ driver.

When controlling the camera using a relative PTZ driver (see the bars in the illustration above) the new position will be relative to the previous position, e.g. left of, below, above, etc. Clicking the bar further from the center results in a larger movement.

In contrast, when using an **absolute** driver, each position on the bar (see right) represents a defined position in the device's range of movement, with the center of the bar representing the point midway between the two extremes of movement.



Clicking a position directly on the bar moves the camera directly to the new position in one smooth movement. Clicking on the arrows at the ends of a bar causes a stepped, incremental change.

### Using CGI links to control PTZ devices

User-defined CGI links on the Live View page can be used to issue HTTP API requests, e.g. PTZ commands. These links are configured in the Live View Layout settings, see page 8.

### PTZ Control Modes

The PTZ device can also be controlled using **click-in-image** movement, which has two different types of navigation; **Center** and **Joystick**.

**Center** mode means that when clicking in the image, the camera view will center on the absolute position that was clicked.

**Joystick** mode moves the camera in the direction of the mouse pointer. By clicking and holding the mouse button down in the image, the PTZ device moves the camera in that direction, relative to the center of the image. The further from the center the image is clicked, the greater the movement. The camera stops moving when the button is released.

### Control Panel

The focus and iris (image brightness) can be adjusted manually by using the control bars, or they can be set for automatic adjustment, by clicking the **Auto iris** and **Auto focus** buttons.

To access the **Auto iris** and **Auto focus** buttons, click on the **Control panel** button. The menu to the right will then appear in the upper left hand corner of the screen.

There are also driver specific shortcuts that can appear in the Control Panel. In the screen to the right, a driver has been installed that brings up the **Wiper** shortcut button, which allows the user to configure and use a windshield wiping action with the AXIS 240Q.

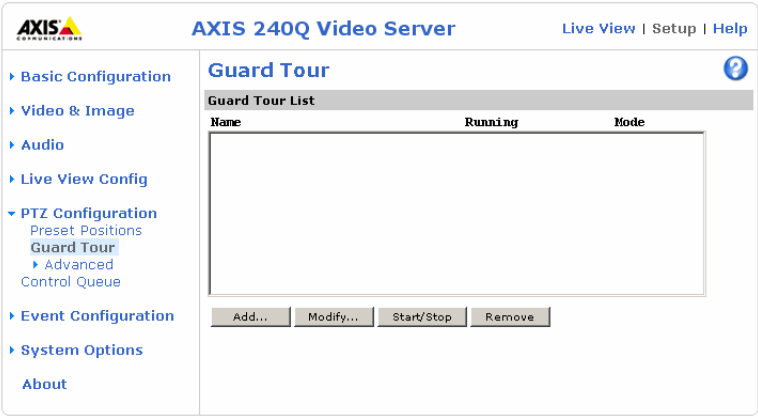


### Preset Positions

Also available with many PTZ devices are **Preset positions**. These presets are selected from the drop-down **Source** list on the Live View page and will move and/or zoom the camera to a pre-defined position, i.e. to cover an area of particular interest. Events can also be configured to go to preset positions when triggered. For information on setting up preset positions, please see *Preset Positions*, on page 29 and the online help.

### Guard Tour

A guard tour moves between chosen **Preset Positions**, one-by-one, in a pre-determined order or randomly, and for configurable time periods. Unlike the **Sequence Mode**, which is a viewing application under **Live View Config** (see *Live View Config*, on page 19), the guard tour sequence will keep running after the user has logged off or closed the Web browser.



### Advanced

**Device Settings** - The device settings window is for driver specific settings, so the appearance of this window can vary depending on the driver installed. Options that can be configured include: **Driver Specific Settings for Video Source 1**, **Mechanical Limits for Moving Video Source 1**, **Light Control for Video Source 1**, and **Extended Driver Specific Settings for Video Source 1**.

**Ctrl Panel** - The **Panel View Settings** window contains tools for creating and saving short command buttons that are located under the **Control panel**. These buttons provide direct access to various built-in auxiliary commands provided by the PTZ driver and are displayed in the PTZ Panel.

**Limits** - Define the pan, tilt, zoom and focus limits for the AXIS 240Q. Movements to the left and right, up and down can be restricted to narrow the area under surveillance. The near focus limit can be set to avoid focusing on objects too close to the camera.



**OSD Menu** - If the PTZ unit supports an internal configuration menu, this can be accessed using the On-Screen Display (OSD). Configure the analog camera by opening and navigating through its internal menu in this display.

## PTZ Control Queue

Use the PTZ Control Queue window to enable and disable PTZ queueing. This window allows you to set up a queue for viewers wanting to access the AXIS 240Q, and limits the number of viewers and the length of time each viewer can access and control PTZ. For more information on how to set up the control queue, please see the online help. [?](#)

Note also that a viewer who belongs to a group (see *Security - Users*, on page 35) that has a higher PTZ priority can go in front of other users in the queue and take control of the AXIS 240Q.

The order of priority for taking control of the queue is listed below:

1. Administrators - An administrator may take the PTZ control regardless of who is currently first in queue. The administrator will be removed from queue 60 seconds after the their last PTZ control command.

2. Event - You can set up the AXIS 240Q to take control of the queue and move to a specific position for 20 seconds when triggered by an alarm. The event will immediately be placed first in queue except when an administrator is in control. For more information see *Triggered Event*, on page 24.
3. Operator - Same as administrator with lower priority.
4. Guard Tour - Guard tour has control of PTZ for an indefinite period of time. It may be overridden by, Operator, Event or administrator. Guard Tour will resume when higher priority groups leave the queue. For more information see *Guard Tour*, on page 32.
5. Viewer - Multiple viewers will need to wait for their turn. The viewer has 60 seconds to control PTZ until control is passed to the next viewer in queue.

**Note:** In order to be able to identify different users in the viewer group, cookies need to be enabled on the client.

# System Options

## Security - Users

User access control is enabled by default, when the administrator sets the root password on first access. New users are authorized with user names and passwords, or the administrator can choose to allow anonymous viewer login to the Live View page, as described below:

**Users** - the user list displays the authorized users and access levels:

Viewer	Provides the lowest level of access, which only allows the user access to the Live View page
Operator	An Operator can view the Live View page, create and modify event types and adjust certain other settings. The Operator does not have access to the Systems Options configuration pages.
Administrator	An administrator has unrestricted access to the Setup Tools and can determine the registration of all other users.

**User Settings** - check the corresponding checkboxes to enable:

- **Anonymous viewer login** - allows any viewer direct access to the Live View page.
- **Anonymous PTZ control login** - allows any viewer access to the Pan Tilt Zoom controllers on the Live View page (if Pan/Tilt/Zoom is available).

## Security - IP Address Filtering

**Allowed IP Addresses** - The administrator can add up to 256 IP addresses to this list. If the IP address filtering checkbox is checked, the AXIS 240Q will only allow/deny access to requests coming from the IP addresses in the list.

The users from these IP addresses need to be specified in the user list with the appropriate access rights (User, Operator or Administrator).

**Referrals** - to prevent unauthorized sources from including the video stream from the AXIS 240Q into external Web pages, check the Referrals box and enter the IP address or Host name of the computer that hosts the Web pages with the included video stream.

Multiple IP addresses/host names can be defined and are separated by semicolons(;)


- Notes:**
- If the referrals feature is enabled and you wish to also allow normal access to the Live View page, the product's own IP address or host name must be added to the list of allowed referrers.
  - Restricting referrers is of greatest value when not using IP address filtering. If IP address filtering is used, then the allowed referrers are automatically restricted to those allowed IP addresses.

## Security - HTTPS

For greater security, the AXIS 240Q can be configured to use HTTPS (Hypertext Transfer Protocol over SSL (Secure Socket Layer)). That is, all communication that would otherwise go via HTTP instead goes via an encrypted HTTPS connection.

**Certificate** - to use HTTPS for communication with the AXIS 240Q, a Certificate must be created using one of these methods:

- A self-signed certificate can be created in the video server, but this does not guarantee the same level of security as an official certificate.
- An official certificate issued by a CA (Certificate Authority). A CA issues and manages security credentials and public keys for message encryption.
  1. Click either **Create self-signed certificate** or **Create Certificate Request** and enter the required information in the provided fields
  2. Click **OK**.
  3. **Create self-signed certificate** generates and installs a certificate which will be displayed under **Installed Certificate**.  
**Create Certificate Request** generates a PEM formatted request which you copy and send to a CA for signing. When the signed certificate is returned, click **Install signed certificate...** to install the certificate in the AXIS 240Q.
  4. Set the **HTTPS Connection Policy** for the administrator, Operator and Viewer to enable HTTPS connection (set to HTTP by default)

Please refer to the home page of your preferred CA for information on where to send the request etc. For more information, please see the online help .

## Date & Time

**Current Server Time** - displays the current date and time (24h clock). The time can be displayed in 12h clock format in overlay images.

**New Server Time** - Select your time zone from the drop-down list and check the daylight saving time changes, if desired.


From the **Time Mode** section, select the preferred method to use for setting the time:

- **Synchronize with computer time** - sets the time from the clock on your computer.
- **Synchronize with NTP Server** - the video server will obtain the time from an NTP server every 60 minutes. Specify the NTP server's IP address or host name.

**Note:** Note that if using a host name for the NTP server, a DNS server must be configured under TCP/IP settings.  
 See **Network > Advanced TCP/IP Settings** below.

- **Set manually** - this option allows you to manually set the time and date.

**Date & Time Format Used in Images** - specify the formats for the date and time (12h or 24h) displayed in the Live View video streams.

Use the predefined formats or use your own custom date and time formats. See **File Naming & Date/Time Formats** in the online help  for information on how to create your own file formats.

## Network - Basic TCP/IP Settings

### IP Address Configuration

The IP address of the video server can be set automatically via DHCP, or a fixed IP address can be set manually. DHCP is enabled by default. To use a fixed IP address, you must also enter the correct subnet mask and default router.


- Notes:**
- DHCP is a protocol for automatic IP address assignment on a network. IP address assignment via DHCP may lead to the situation where the IP address changes and you lose contact. Configure the options for notification of IP address change (under Services) to receive notification from the video server when the IP address changes.
  - Alternatively, if your DHCP server can update a DNS server, you can access the AXIS 240Q by host name which is always the same, regardless of the IP address.

### Services

**Options for notification of IP address change** - if the IP address for the video server changes, e.g. automatically by DHCP, you can choose to be notified of the change. Click **Settings...** and enter the required information.

**AXIS Internet Dynamic DNS Service** - If the AXIS 240Q Video Server has been registered with the Axis Internet Dynamic DNS service and the IP address for the product changes, the service is updated to reflect the change. Check the box to enable/disable automatic updates.

The domain name currently registered at the Axis Internet Dynamic DNS service for your product can at any time be removed. To do this click **Settings...** and follow the instructions.

For more information, please refer to the online help .

## Network - Advanced TCP/IP Settings

### DNS Configuration

DNS (Domain Name Service) provides the translation of host names to IP addresses on your network.

**Obtain DNS server address via DHCP** - automatically use the DNS server settings provided by the DHCP server. Click the View button to see the current settings.

**Use the following DNS server address** - enter the desired DNS server by specifying the following:

**Domain name** - enter the domain(s) to search for the host name used by the AXIS 240Q. Multiple domains can be separated by semicolons (;). The host name is always the first part of a Fully Qualified Domain Name, e.g. **myserver** is the host name in the Fully Qualified Domain Name **myserver.mycompany.com** where **mycompany.com** is the Domain name.

**DNS servers** - enter the IP addresses of the primary and secondary DNS servers.

### NTP

**Obtain NTP server address via DHCP** - use a DHCP server to automatically find an NTP server to synchronize clock of the AXIS 240Q with the other devices on the network

**Use the following NTP server address** - use the host name or IP address of a specific NTP server for time synchronization.

### Host Name Configuration

The AXIS 240Q can be accessed using a host name, instead of an IP address. The host name is usually the same as the assigned DNS Name.

For more information, please see the online help 

### Link-Local Address

This is enabled by default and assigns the AXIS 240Q an additional IP address for use with UPnP™. The AXIS 240Q can have both a Link-Local IP and a static/DHCP-supplied IP address at the same time - these will not affect each other.

### HTTP

The default HTTP port number (80) can be changed to any port within the range 1024-65535. This is useful for e.g. simple port mapping.

## HTTPS

The default HTTP port number (443) can be changed to any port within the range 1024-65535. This is useful for e.g. simple port mapping.

## NAT traversal

Use NAT traversal when your video server is located on an intranet and you want to make it available from the other side of a NAT router.

## Network Traffic

The default setting is **Auto-negotiate** which means that the correct speed is automatically selected. If necessary, you can set the connection speed by selecting it from the drop-down list.

**Maximum bandwidth** - Specify, in Mbit/s or kbit/s, the maximum bandwidth the AXIS 240Q is allowed to use on your network. This is a useful function when connecting the video server to busy or heavily loaded networks. The default setting is **Unlimited**.

For more information, please see the online help 

## Network - SOCKS

SOCKS is a networking proxy protocol. The AXIS 240Q can be configured to use a SOCKS server to reach networks on the other side of a firewall/proxy server. This functionality is useful if the video server is located on a local network behind a firewall, but notifications, uploads, alarms, etc., need to be sent to a destination outside the local network (e.g. to the Internet).

## Network - SMTP (email)

Enter the host names or addresses for your primary and secondary mail servers in the fields provided, to enable event and error email messages from the video server to predefined addresses, via SMTP. If the mail server requires SMTP authentication, check the box for **Use authentication to log in to this server** and enter the user name and password used for logging in. Several different methods of authentication are available. See the online help for more information.

## SNMP

The Simple Network Management Protocol (SNMP) allows the remote management of network devices. Select the version of SNMP to use, depending on the level of security required. Select the version of SNMP to use, by checking the appropriate box. The three levels of security are:

- SNMP V1 - includes no security
- SNMP V2c - uses very simple security, e.g. community name as password
- SNMP V3 - provides encryption and secure passwords. Use with HTTPS.

If using V1 and V2c, enter the community name for read-only access to all supported SNMP objects (except the root password and other objects that require write access). Default value = public. You can also specify the community name for read/write access to all supported SNMP objects (except read-only objects). Default value = pass.

If using HTTPS enter the password if it has not already been set. To set the password again, the AXIS 240Q must be reset to the factory default settings.

## Network - UPnP™

The video server includes support for UPnP™ in Windows ME and Windows XP. UPnP™ is enabled by default.

**Note:** UPnP™ must be installed on your workstation. To do this, open the Control Panel from the Start Menu and select **Add/Remove Programs**. Select **Add/Remove Windows Components** and open the **Networking Services** section. Click **Details** and then select **UPnP™** as the service to add.

## Ports & Devices

**I/O Ports** - the pinout, interface support and the control and monitoring functions provided by this connector are described in *Unit Connectors*, on page 44.

**RS232** - The COM port RS-232 on the AXIS 240Q supports several operational modes listed on this page. For more information, please see *COM Ports RS-232 and RS-485*, on page 46.

**RS485** - The COM ports on the AXIS 240Q supports several operational modes listed on this page. For more information, please see *COM Ports RS-232 and RS-485*, on page 46.

## Maintenance

- **Restart** - The unit is restarted without changing any of the settings. Use this method if the unit is not behaving as expected.
- **Restore** - The unit is restarted and most current settings are reset to factory default values. The settings that will not be reset are:
  - the boot protocol (DHCP or static)



- the static IP address
- the default router
- the subnet mask
- the system time
- **Default** - The default button should be used with caution. Pressing this will return all of the video server's settings (including the IP address) to the factory default values.

**Upgrade Server** - See *Upgrading the Firmware*, on page 47.

**Backup** - To take a backup of all of the parameters, and any user-defined scripts, click this button. If necessary, it is then possible to return to a previous configuration if settings are changed and there is unexpected behavior.

**Restore** - click the **Browse** button to locate the saved backup file (see above) and then click the **Restore** button. The settings will be restored to the previous configuration.

**Note:** Backup and Restore can only be used on the same unit running the same firmware. This feature is not intended for multi-configurations or for firmware upgrades.

## Support

The **Support Overview** page provides valuable information on troubleshooting and contact information, should you require technical assistance.

**System Overview** - is a quick look over the camera's status and settings. Information that can be found here includes the camera's Firmware version, IP address, Security, Event and Image settings and Recent log items. Many of the captions are also links to the proper **Setup** page to conveniently make adjustments in the camera's settings.

**Logs & Reports** - when contacting Axis support, please be sure to provide a valid Server Report with your query.

**View Information** - The **Log** report and the **Parameter List** also provide valuable information for troubleshooting and when contacting Axis' support service.

### Configuration:

**Log Level for Log Files** - from the drop-down list, select the level of information to be added to the Log file.

**Log Level for Email** - from the drop-down list, select the level of information to send as email and enter the destination email address.

**Log Level for Email** - from the drop-down list, select the level of information to send as email and enter the destination email address.

## Advanced

Scripting is an advanced function that provides the possibility to customize and use scripts. This function is a very powerful tool.

### Caution!

Improper use may cause unexpected behavior or even cause loss of contact with the unit. If a script does cause problems, reset the unit to its factory default settings. A backup file may be of use to return the unit to its latest configuration).

**Axis strongly recommends that you do not use this function unless you fully understand the consequences.** Note that Axis support does not provide assistance for problems with customized scripts.

For more information, please visit the Developer pages at [www.axis.com/developer](http://www.axis.com/developer)

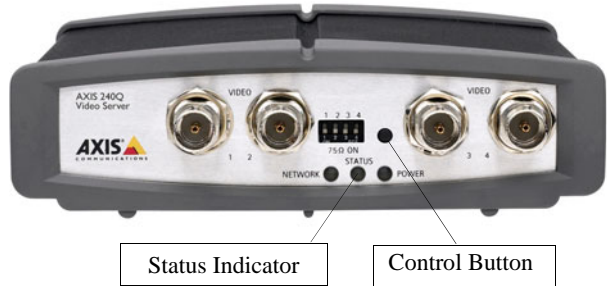
**Plain Config** - this function is for the advanced user with experience of Axis video server configuration. All parameters can be set and modified from this page. Help is available from the standard help pages.

## Resetting to the Factory Default Settings

To reset the AXIS 240Q to the original default settings, go to the **System Options > Maintenance** web page (as described in *Maintenance*, on page 40), or use the control button on the front panel, as described below:

### Using the Control Button

1. Switch off the AXIS 240Q by disconnecting power.
2. Using a suitably pointed object, press and hold the Control button while you reconnect power.
3. Keep the Control button pressed until the **Status Indicator** displays yellow (this may take up to 15 seconds).
4. Release the Control button.
5. When the Status Indicator changes to Green (may take up to 1 minute), the process is complete and the AXIS 240Q has been reset.
6. Re-install the AXIS 240Q. See the Installation Guide.



## Unit Connectors

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The following connectors are described in this section:

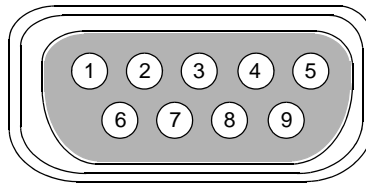
- *The D-Sub Connector*, on page 44
- *The I/O Terminal Connector*, on page 45
- *COM Ports RS-232 and RS-485*, on page 46

### The D-Sub Connector

The AXIS 240Q provides one 9-pin D-sub connector, providing the physical interface for an RS-232 port, used for connecting accessory equipment, such as PTZ devices for the remote control of connected video cameras.

Pin assignment table and pinout of the RS-232 connector:

Pin	Function
1	CD
2	- RXD
3	- TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



## The I/O Terminal Connector

This section describes the pinout and interface support provided by the 12-pin I/O terminal connector, which includes:

- 4 digital transistor outputs
- 4 digital inputs
- an RS-485 interface
- auxiliary power and GND

The terminal connector is used in applications for e.g. motion detection, event triggering, time lapse recording, alarm notification via email, image storage to FTP locations, etc.

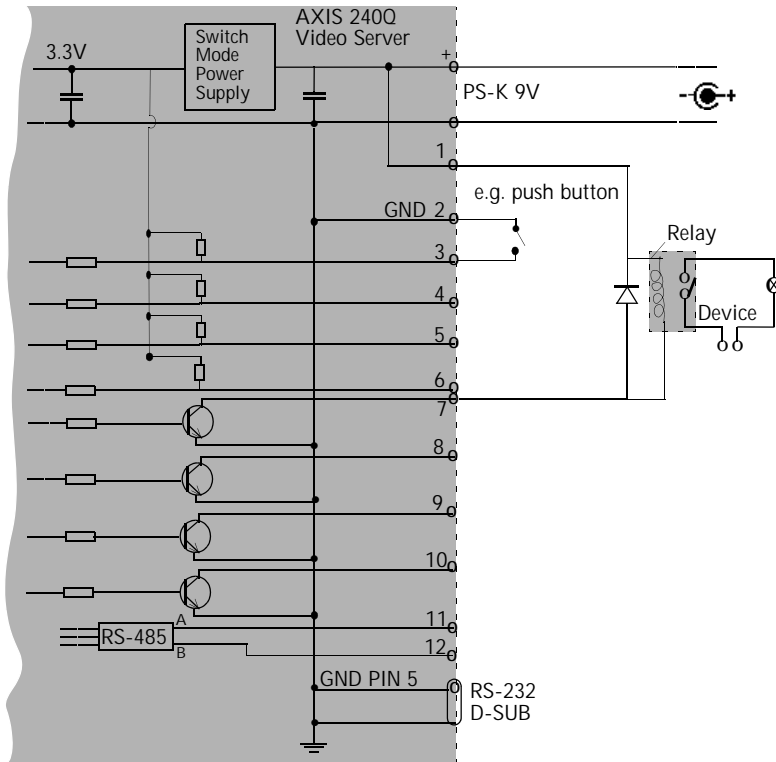
- **Inputs** - e.g. a push button. If the button is pressed, the state changes, and the input will be active (shown under **Event Configuration > Port Status**).
- **Outputs** - e.g. an alarm device that can be activated from Output buttons on the **Live View** page or as an action to an **Event Type**. The output will show as active (in **Event Configuration > Port Status**), if the device is activated.

Pin	Function	Description
1	Auxiliary DC Power Input	7-20 VDC/min 7W. Electrically connected in parallel with PS-k power connector, provides an auxiliary connector for mains power to the unit. If the product is powered via this pin, use a fuse (Fuse rating: 1A Slow). This pin can also be used to power auxiliary equipment, max 100mA
2	GND	
3	Digital Input 1	Connect to GND to activate or leave floating (or unconnected) to deactivate.
4	Digital Input 2	
5	Digital Input 3	
6	Digital Input 4	
7	Transistor Output	With a maximum load of 100mA and maximum voltage of 24V DC, this output has an open-collector NPN transistor with the emitter connected to pin 2 (GND). If it is to be used with an external relay, a diode must be connected in parallel with the load for protection against any voltage transients.
8	Transistor Output	
9	Transistor Output	
10	Transistor Output	
11	RS-485 - A (non-inverting)	A half-duplex RS-485 interface for controlling auxiliary equipment, e.g. PTZ devices.
12	RS-485 - B (inverting)	

The AXIS 240Q includes one (green) 12-pin terminal block. Connect input/output devices to this block:

1. Loosen the corresponding screw on top of the pin (see the table above to determine which pin to use).
2. Push the cable into the connector and secure it by fastening the screw.
3. Once all devices are connected, connect the terminal block to the video server's terminal connector.

## Schematic Diagram - I/O Terminal Connector



## COM Ports RS-232 and RS-485

The COM Ports RS-232 and RS-485 support several operational modes:

- **Generic TCP/IP** - enables the video server to receive status/data and send commands via TCP/IP
- **Generic HTTP** - enables the video server to receive status/data and send commands via HTTP
- **Pan Tilt Zoom (PTZ)** - for controlling a PTZ device. A PTZ device requires a driver for its function. Please see page 28 for information on how to connect PTZ devices. Drivers can be obtained from [www.axis.com](http://www.axis.com)

# Troubleshooting

## Checking the Firmware

Firmware is software that determines the functionality of the AXIS 240Q. One of your first actions when troubleshooting a problem should be to check the currently installed version. The latest version may contain a correction that fixes your particular problem. The current firmware version in your AXIS 240Q can be seen under **Setup > Basic Configuration**.

## Upgrading the Firmware

When you download firmware from the Axis Web site, your Axis product will receive the latest available functionality. Always read the upgrade instructions and release notes available with each new release, before updating the firmware.

New firmware can be downloaded to the AXIS 240Q over the network.

**Note:** Pre-configured and customized settings will be retained for use when the new firmware is running (provided the features are available in the new firmware) although this is not guaranteed by Axis Communications.

1. Save the firmware file to your computer. The latest version of the AXIS 240Q firmware is available free of charge from the Axis Web site at [www.axis.com/techsup](http://www.axis.com/techsup) or from your local distributor.
2. Go to **Setup > System Options > Maintenance** in the video server's Web pages.
3. In the **Upgrade Server** section and browse to the desired firmware file on your computer. Click **Upgrade**.

### Upgrade Server

Upgrade the AXIS 240Q Video Server with the latest firmware.

Specify the firmware to upgrade to:  **Browse...** and click **Upgrade**

**Note:** Do not disconnect power to the unit during the upgrade. The unit restarts automatically after the upgrade has completed. (1-10 minutes.)

- Notes:**
- Always read the upgrade instructions available with each new release, before updating the firmware.
  - After starting the process, you should always wait at least 20 minutes before restarting the AXIS 240Q, even if you suspect the procedure has failed.
  - Your dealer reserves the right to charge for any repair attributable to faulty updating by the user.

## Emergency Recovery Procedure

If power or the network connection to the AXIS 240Q is lost during the upgrade, the process will fail and the unit will become unresponsive. A flashing red Status LED indicates a failed upgrade. To recover the unit, follow the steps below. The serial number is found on the underside label on the product casing.

1. **Unix/Linux** - From the command line, type the following:  
arp -s <IP address of AXIS 240Q> <Serial number> temp  
ping -s 408 <IP address of AXIS 240Q>

**Windows** - From a command/DOS prompt, type the following:  
arp -s <IP address of AXIS 240Q> <Serial number>  
ping -l 408 -t <IP address of AXIS 240Q>

2. If the unit does not reply within a few seconds, restart it and wait for a reply. Press CTRL+C to stop Ping.
3. Open a browser and type in the AXIS 240Q's IP address. In the page that appears, use the **Browse** button to select the upgrade file to use, e.g. axis240q.bin. Then click the **Load** button to restart the upgrade process.
4. After the upgrade has completed (1-10 minutes), the unit will automatically restart and show a steady green on the Power and Status LED's and flashing green or amber on the Network LED.
5. Reinstall the AXIS 240Q. See the Installation Guide.

If the emergency recovery procedure does not get the AXIS 240Q up and running again, please contact Axis support at [www.axis.com/techsup/](http://www.axis.com/techsup/)

## Support

If you contact Axis support, please help us help you resolve your problems expediently by providing a server report, log file and a brief description of the problem.

**Server Report** - go to **Setup > System Options > Support Overview**. The server report contains important information about the server and its software, as well as a list of the current parameters.

**Log file** - go to **Setup > System Options > Logs & Reports**. The Log file records events within the unit since the last restart of the system and can prove a useful diagnostic tool for troubleshooting.



## Symptoms, Possible Causes and Remedial Actions

### Problems setting the IP address

Using ARP/Ping - the IP address must be set within two minutes after power has been applied to the video server	Restart the server and try again. Ensure also the ping length is set to 408. See or <i>ARP and Ping in Windows</i> on page 13, or <i>ARP and Ping in UNIX/Linux</i> on page 14.
The video server is located on a different subnet.	If the IP address intended for the AXIS 240Q and the IP address of your computer are located on different subnets, you will not be able to set the IP address. Contact your network administrator for an IP address on the same subnet as the computer you are performing the installation from.
The IP address is being used by another device	Disconnect power from the AXIS 240Q. Run the Ping command (in a Command/DOS window, type <b>ping &lt;IP address of unit&gt;</b>  If you receive: <b>Reply from &lt;IP address&gt;: bytes = 32; time = 10 ms.....</b> - this means that the IP address may already be in use by another device on your network. You must obtain a new IP address and reinstall the unit.  If you receive: <b>Request timed out</b> - this means that the IP address is available for use with your video server. In this case, check all cabling and reinstall the unit.

### The AXIS 240Q cannot be accessed from a Web browser

The IP address has been changed by DHCP	1) Move the AXIS 240Q to an isolated network or to one with no DHCP or BOOTP server. Set the IP address again, using the ARP Ping command. 2) Access the unit and disable BOOTP and DHCP in the TCP/IP settings. Return the unit to the main network. The unit now has a fixed IP address that will not change. 3) As an alternative to 2), if dynamic IP address via DHCP or BOOTP is required, select the required service and then configure IP address change notification from the network settings. Return the unit to the main network. The unit will now have a dynamic IP address, but will notify you if the address changes.
Other networking problems	Test the network cable by connecting it to another network device, then Ping that device from your workstation. See instructions above.

### Cannot send notifications, uploads, alarms, etc., to a destination outside the local network

Firewall protection	The video server can be configured to use a SOCKS server to reach networks on the other side of a firewall/proxy server
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### Your AXIS 240Q is accessible locally, but not externally

Firewall protection	Check the Internet firewall with your system administrator.
Default routers required	Check if you need to configure the default router settings.
The Internet site is too heavily loaded	Use a script on your web server to relay images from the AXIS 240Q to the Internet.

### The Power indicator is not constantly lit

Faulty power supply	Verify that you are using an AXIS PS-K power supply.
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### The Status indicator is flashing red and the server is inaccessible

A firmware upgrade has been interrupted or the firmware has been damaged in some other way.	A rescue firmware is running in the product. First, set the IP address using AXIS IP utility or ARP and Ping, see page 10. Then, using a browser, access the unit and download the latest firmware to the product, see <i>Upgrading the Firmware</i> , on page 47.
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### No images displayed in the Web interface

Problem with AMC ( <i>Internet Explorer only</i> )	To enable the updating of images in Microsoft Internet Explorer, set your Web browser to allow ActiveX controls. Also, make sure that AXIS Media Control (AMC) component is installed on your workstation.
Installation of additional ActiveX component restricted or prohibited	Configure your AXIS 240Q to use a Java applet for updating the images under Live View Config > Layout > Default Viewer for Internet Explorer. See the online help for more information.

**Video Image Problems**

Image too dark or too light.	Check that the termination dip switch for the video source is set to the correct position. See also the online help on Video Source Settings
Black borders around the video image	Adjust the X and/or Y offset, in the Video Source Settings. See the online help for information.
Problems uploading own files	There is only limited space available for the upload of your own files. Try deleting one or more existing files, to free up space
Missing images in uploads	This can occur when trying to use a larger image buffer than is actually available. Try lowering the frame rate or the upload period.
Slow image update	Configuring e.g. pre-buffers, motion detection, high resolution images, high frame rates, etc., will reduce the performance of the video server.
Slow performance	Slow performance may be caused by e.g. heavy network traffic, multiple users accessing the unit, low performance clients, use of features such as Motion Detection, Event handling, Image rotation.

**Bad snapshot images**

Display incorrectly configured on your workstation	In Display Properties, configure your display to show at least 65000 colors, i.e. at least 16-bit. Using only 16 or 256 colors on your display will produce dithering artifacts in the image.
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**Incorrect exposure in images**

Incorrect line termination	If the AXIS 240Q is to be connected in loop through with other equipment, disable the input termination by turning the corresponding DIP switch to OFF.
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For additional assistance, please contact your reseller or check the product's support pages on the Axis Website at [www.axis.com/techsup](http://www.axis.com/techsup)

# Technical Specifications

Item	Specification
Model	<ul style="list-style-type: none"> <li>• AXIS 240Q: Four port video server</li> <li>Also available as Video Rack Solution</li> </ul>
Video compression	<ul style="list-style-type: none"> <li>• Motion-JPEG.</li> <li>• Single snapshot JPEG images.</li> </ul>
Resolutions	<ul style="list-style-type: none"> <li>• 4CIF, 2CIFExp, 2CIF, QCIF</li> <li>• max 704x480 (NTSC) 768x576 (PAL)</li> <li>• max 160x120 (NTSC) 176x144 (PAL)</li> </ul>
Frame rate	<ul style="list-style-type: none"> <li>• Up to 6/5 (NTSC/PAL) frames per second per channel</li> </ul>
Video streaming	<ul style="list-style-type: none"> <li>• Motion JPEG</li> <li>• Controllable frame rate and bandwidth</li> </ul>
Image settings	<ul style="list-style-type: none"> <li>• Compression levels: 11</li> <li>• Rotation: 90°, 180°, 270°</li> <li>• Aspect ratio correction</li> <li>• Color: Color, black &amp; white</li> <li>• Overlay capabilities: Time, date, text or image</li> </ul>
Security	<ul style="list-style-type: none"> <li>• Multi-user password protection.</li> <li>• IP address filtering.</li> <li>• HTTPS (SSL/TLS) encryption.</li> </ul>
Users	<ul style="list-style-type: none"> <li>• 20 simultaneous users</li> </ul>
Pan/Tilt/Zoom	<ul style="list-style-type: none"> <li>• PTZ support for remote camera control. Please see <a href="http://www.axis.com">www.axis.com</a> for information about supported devices.</li> </ul>
Terminal connector - I/O ports and connections	<ul style="list-style-type: none"> <li>• 4 digital alarm inputs</li> <li>• 4 digital output transistors (max 24V, 0.1 A)</li> <li>• RS-485 serial port</li> <li>• Alternative power</li> </ul>
D-Sub connector	<ul style="list-style-type: none"> <li>• RS-232 serial port. Max 115 Kbit/s.</li> </ul>
Network connector	<ul style="list-style-type: none"> <li>• Ethernet 10BaseT/100BaseTX, connected via CAT 5 network cable to RJ-45 network socket.</li> </ul>
Processors and memory	<ul style="list-style-type: none"> <li>• ARTPEC-2 compression chip</li> <li>• ETRAX-100 LX (32-bit RISC, 100MIPS CPU)</li> <li>• 32 MB RAM</li> <li>• 8 MB Flash memory</li> </ul>
Power	<ul style="list-style-type: none"> <li>• External AXIS PS-K Power adapter (included), 9V DC, 9W.</li> <li>• Alternative power connection via terminal connector; 7-20V DC, max 7W.</li> </ul>
Operating Conditions	<ul style="list-style-type: none"> <li>• Temp: 5°C (41°F) to 50°C (122°F).</li> <li>• Humidity: 20-80% RH (non-condensing).</li> </ul>
Minimum web browsing requirements	<ul style="list-style-type: none"> <li>• Pentium III CPU 500 MHz or higher, or equivalent AMD.</li> <li>• 128 MB RAM.</li> <li>• AGP graphic card, Direct Draw, 32 MB RAM.</li> <li>• Windows XP, 2000, NT4.0, ME or 98.</li> <li>• DirectX 9.0 or later.</li> <li>• Internet Explorer 6.x or later.</li> <li>• For other operating systems and browsers, please see <a href="http://www.axis.com/techsup">www.axis.com/techsup</a>.</li> </ul>

<u>Item</u>	<u>Specification</u>
Supported protocols	<ul style="list-style-type: none"> <li>• Motion JPEG streaming: HTTP.</li> <li>• Event notification: HTTP, TCP, SMTP.</li> <li>• Image upload: FTP, SMTP, HTTP.</li> <li>• Network control data: DHCP, UPnP, ARP, DNS, DynDNS3, NAT traversal, SOCKS, SNMP, NTP Security: SSL/TLS*, HTTPS.</li> <li>• More information on protocol usage is available at: <a href="http://www.axis.com">www.axis.com</a>.</li> <li>• This product includes software developed by the Open SSL Project for use in the Open SSL Tool kit (<a href="http://www.openssl.org">www.openssl.org</a>).</li> </ul>
Approvals - EMC	<ul style="list-style-type: none"> <li>• CE compliant according to: EN550022/1998 Class B EN550024/1998 EN61000-3-2:2000 EN61000-3-3:2000</li> <li>• FCC Subpart B, Class A, B</li> <li>• VCCI Class B</li> <li>• C-tick AS/NZS 3548</li> <li>• Canadian ICES-003 B by compliance with EN55022/1998 Class B</li> </ul>
Approvals - Safety	<ul style="list-style-type: none"> <li>• EN60950, UL, CSA (power adapter only)</li> </ul>
Video Inputs	<ul style="list-style-type: none"> <li>• 4 BNC composite video inputs with 75 Ohm/Hi Z termination, including autosensing for NTSC and PAL.</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Remote configuration and status using web-based setup tools.</li> </ul>
Pre/Post Alarm Buffer	<ul style="list-style-type: none"> <li>• Up to 3MB memory available per video source for pre/post alarm image storage.</li> </ul>
Dimensions	<ul style="list-style-type: none"> <li>• Height: 1.7 (4.2 cm)</li> <li>• Width: 5.5 (14.0 cm)</li> <li>• Length: 6.1 (15.5 cm)</li> <li>• Weight: 1.2 lb. (0.54 kg) power adapter not included</li> </ul>
Complimentary Software	<ul style="list-style-type: none"> <li>• AXIS Media Control (AMC) - ActiveX component software required for Microsoft Internet Explorer - installed automatically on first use.</li> <li>• Optional: AXIS IP Utility - For Windows installation.</li> </ul>

## Performance considerations

When setting up your system it is important to consider how various settings and situations will affect the overall performance. The following aspects are among the most important to consider:

- Image resolution - High image resolution creates larger images. More data increases the total bandwidth used.
- Image compression - A low compression level creates larger images. More data increases the total bandwidth used.
- Clients - Large numbers of clients accessing the server increases the total bandwidth used.
- Video channels - The number of video channels simultaneously accessed by clients affects the video server's CPU and video compression load.
- Different streams (resolution, compression, etc.) viewed simultaneously by different clients affect the server's CPU load, the video compression load and the total bandwidth throughput.
- Events - Heavy usage of event settings affects the server's CPU load.
- Motion detection - This can affect performance when enabled.
- HTTPS - Increases the server's CPU load when encrypting data.
- Network utilization - Heavy utilization due to poor infrastructure.
- Poorly performing client PC - Lowers perceived performance.

## Glossary

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**ActiveX** - A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.

**API** - Application Programming Interface. The Axis API can be used for integrating Axis products into other applications.

**ARP** - Address Resolution Protocol. This is used to associate an IP address to a hardware MAC address. A request is broadcast on the local network to find out what the MAC address is for the IP address.

**ARTPEC** - Axis Real Time Picture Encoder - used for image compression.

**BOOTP** - A protocol that can automatically configure a network device (give it an IP address).

**CGI** - Common Gateway Interface. A set of rules (or a program) that allows a Web Server to communicate with other programs.

**Client/Server** - Describes the network relationship between two computer programs, in which one, the client, makes a service request from another - the server.

**DC-Iris** - This special type of iris is electrically controlled by the Axis camera, to automatically regulate the amount of light allowed to enter.

**DSL** - Digital Subscriber Line. A means of transferring data via standard phone lines.

**Ethernet** - A widely used networking standard.

**ETRAX** - Axis' own microprocessor.

**Firewall** - A virtual barrier between a LAN (Local Area Network) and other networks, e.g. the Internet.

**FTP** - File Transfer Protocol. Used for the simple transfer of files to and from an FTP-server.

**Full-duplex** - Transmission of data, e.g. audio, in two directions simultaneously.

**Half-duplex** - A half-duplex link communicates in one direction at a time only, much like a walkie-talkie. Two way communication is possible, but not simultaneously.

**HTTP** - Hypertext Transfer Protocol. The set of rules for exchanging files (text, images, sound, video, and other files) on the World Wide Web.

**HTTP-S (HTTPS)** - An extension to the HTTP protocol to support sending data securely over the World Wide Web.

**Intranet** - A private network limited to an organization or corporation. Usually closed to external traffic.

**IP** - Internet Protocol. See TCP/IP.

**IP address** - A unique number used by a computer on the network to allow it to be identified and found.

**ISMA** - Internet Streaming Media Alliance.

**JPEG** - A standard image format, used widely for photographs. Also known as JPG.

**LAN** - A local area network (LAN) is a group of computers and associated devices that typically share common resources within a limited geographical area.

**Linux** - A popular operating system that is "open source" and practically free of charge.

**Lux** - A standard unit for light measurement.

**Mbit/s** - Megabits per second. A unit for measuring speeds in networks. A LAN might run at 10 or 100 Mbit/s.

**MPEG-4** - A video compression standard that makes good use of bandwidth, and which can provide DVD-quality video streams at less than 1 Mbit/s.

**Multicast** - A bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

**PEM** - Privacy Enhanced Mail. An early standard for securing electronic mail. The PEM-format is often used for representing an HTTPS certificate or certificate request.

**Ping** - A small utility used for sending data packets to network resources to check that they are working and that the network is intact.

**Pre/post alarm image** - The images from immediately before and after an alarm.

**Protocol** - A special set of rules governing how two entities will communicate. Protocols are found at many levels of communication, and there are hardware protocols and software protocols.

**Router** - A device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router is often included as part of a network switch (see below).

**RTP** - Real-Time Transfer Protocol. A transfer protocol designed for the delivery of live content, e.g. MPEG-4.

**Simplex** - In simplex operation, a network cable or communications channel can only send information in one direction; it's a "one-way street".

**Subnet Mask** - An IP address consists of two components: the network address and the host address. "Subnetting" enables a network administrator to further divide the host part of the address into two or more subnets. The subnet mask identifies the subnet to which an IP address belongs.

**Switch** - Whilst a simple hub transmits all data to all devices connected to it, a switch only transmits the data to the device it is specifically intended for.

**SMTP** - A common e-mail protocol.

**TCP/IP** - Transmission Control Protocol/Internet Protocol. A suite of network protocols that determine how data is transmitted. TCP/IP is used on many networks, including the Internet. TCP keeps track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

**UDP** - The User Datagram Protocol is a communications protocol that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP) and, together with IP, is also known as UDP/IP.

**Unicast** - Communication between a single sender and a single receiver over a network. A new connection is established for each new user.

**URL** - Uniform Resource Locator. An "address" on the network.

**Varifocal** - A varifocal lens provides a wide range of focal lengths, as opposed to a lens with a fixed focal length, which only provides one.

**WAN** - Wide-Area-Network. Similar to a LAN, but on a larger geographical scale.

**Web server** - A program on a computer that delivers the resources (usually web pages) requested by the web user (the client).

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